

CLAIMS

1. A plastic package comprising:

a plurality of terminal members each having an outer terminal having an upper surface, a lower surface and an outer side surface, an inner terminal having a contact surface, and a connecting part connecting the outer and the inner terminal;

a semiconductor device provided with terminal pads connected to the contact surfaces of the inner terminals with bond wires; and

a resin molding sealing the terminal members, the semiconductor device and the bond wires therein;

wherein the inner terminals of the terminal members are thinner than the outer terminals and have the contact surfaces,

the contact surfaces of the inner terminals, the upper surfaces of the outer terminals, the lower surfaces of the outer terminals of the terminal members are included in planes, respectively, and

the upper, the lower and the outer side surfaces of the outer terminals of the terminal members, and a surface of the semiconductor device opposite the surface provided with the terminal pads are exposed outside, and the inner terminals, the bond wires, the semiconductor device and the resin molding are included in the thickness of the outer terminals.

2. The plastic package according to claim 1, wherein

the outer terminal of each terminal member has cut part on the outer side surface.

3. The plastic package according to claim 1, wherein

each terminal member is formed of Cu, a Cu-base alloy or a Fe-Ni alloy containing 42% Ni.

4. The plastic package according to claim 1, wherein

the contact surfaces of the inner terminals and the upper and lower surfaces of the outer terminals of the terminal members are coated with a plated metal layer selected from a plated solder layer, a plated gold layer, a plated silver layer, a plated palladium layer and a plated tin layer.

5. A plastic package fabricating method comprising the steps of:

forming a processed sheet having at least one pair of terminal members connected to each other through a connection, each having an outer terminal, an inner terminal and a connecting part connecting the outer and the inner terminal by subjecting a terminal forming sheet to a half-etching process;

attaching the processed sheet to a semiconductor device supporting tape with a surface thereof opposite a half-etched surface in contact with the semiconductor device supporting tape, and attaching a semiconductor device to the semiconductor device supporting tape;

connecting the inner terminals of the terminal members of the processed sheet to the semiconductor device with bond wires;

sealing the processed sheet and the semiconductor device held between a pair of flat molding plates in a resin molding by a molding process; and

finishing a plastic package by removing the pair of flat molding plates and the semiconductor device supporting tape from the resin molding, attaching a cutting tape to the resin molding, and cutting parts, corresponding to the connection of the processed sheet, of the resin molding from a side opposite the side of the cutting tape.

6. The plastic package fabricating method according claim 5, wherein

the semiconductor device supporting tape is a flat suction plate.

7. The plastic package fabricating method according to claim 6, wherein

the flat suction plate is provided with suction holes arranged in its entire surface.

8. The plastic package fabricating method according to claim 5, wherein

the semiconductor device supporting tape is a molding tape.

9. A stacked plastic package formed by stacking a plurality of plastic packages each comprising:

a plurality of terminal members each having an outer terminal having an upper surface, a lower surface and an outer side surface, an inner terminal having a contact surface, and a connecting part connecting the outer and the inner terminal;

a semiconductor device provided with terminal pads connected to the contact surfaces of the inner terminals with bond wires; and

a resin molding sealing the terminal members, the semiconductor device and the bond wires therein;

wherein the inner terminals of the terminal members are thinner than the outer terminals and have the contact surfaces,

the contact surfaces of the inner terminals, the upper surfaces of the outer terminals, the lower surfaces of the outer terminals of the terminal members are included in planes, respectively, and

the upper, the lower and the outer side surfaces of the outer terminals of the terminal members, and a surface of the semiconductor device opposite the surface provided with the terminal pads are exposed outside, and the inner terminals, the bond wires, the semiconductor device and the resin molding are included in the thickness of the outer terminals.

10. The stacked plastic package according to claim 9, wherein

the lower surfaces of the outer terminals of the plastic package are connected electrically to the upper surfaces of the outer terminals of the plastic package underlying the former.

11. The stacked plastic package according to claim 9, wherein

the plurality of plastic packages are arranged in a plurality of rows and stacked up in a plurality of layers.

12. The stacked, plastic package according to claim 11, wherein

the outer side surfaces of the respective outer terminals of the laterally adjacent plastic packages are connected electrically.

13. A plastic package comprising:

a plurality of terminal members each having an outer terminal having an upper surface, a lower surface and an outer side surface, and leads including inner terminals each having an upper surface and a lower surface;

a semiconductor device supported by the leads and provided with terminal pads connected to the inner terminals with bond wires; and

a resin package sealing the terminal members, the semiconductor device and the bond wires therein;

wherein the inner terminals of the terminal members are thinner than the outer terminals, have the upper and the lower surfaces, and are included in the thickness of the outer terminals,

the upper and the lower surfaces of the inner terminals and the upper and the lower surfaces of the outer terminals of the terminal members are included in planes, respectively, and

the lower and the outer side surfaces of the outer terminals of the terminal members are exposed outside.

14. The plastic package according to claim 13,

wherein

the semiconductor device is of a center-pad type, and the leads are connected to a peripheral part of the semiconductor device.

15. The plastic package according to claim 13, wherein

an additional semiconductor device provided with terminal pads connected to the inner terminals with bond wires is put on the semiconductor device.

16. The plastic package according to claim 13 wherein

the package is formed in a flat and square shape.

17. The plastic package according to claim 13 wherein

the upper surfaces of the outer terminals of each terminal member are partly exposed.

18. The plastic package according to claim 13, wherein

cut parts are formed in the outer surfaces of the outer terminals of the terminal members, respectively.

19. The plastic package according to claim 13, wherein

terminal members are formed of Cu, a Cu-base alloy or a Fe-Ni alloy containing 42% Ni.

20. The plastic package according to claim 13, wherein

the respective upper and lower surfaces of the inner terminals and the outer terminals of the terminal members are coated with a plated metal layer selected from a plated solder layer, a plated gold layer, a plated silver layer, a plated palladium layer and a plated tin layer.

21. A plastic package fabricating method comprising the steps of:

forming a processed sheet having at least one pair of terminal members connected to each other through a

connection, each having an outer terminal, a lead including an inner terminal by subjecting a terminal forming sheet to a half-etching process;

mounting a semiconductor device on the leads of the terminal members of the processed sheet;

connecting the inner terminals of the terminal members of the processed sheet to the semiconductor device with bond wires;

attaching a molding tape to a half-etched surface of the processed sheet and sealing the processed sheet and the semiconductor device in a resin molding by molding; and

finishing a plastic package by removing the molding tape from the resin molding, attaching a cutting tape to the resin molding, and cutting parts, corresponding to the connection of the processed sheet, of the resin molding from a side opposite the side of the cutting tape.

22. The plastic package fabricating method according to claim 21, wherein

the processed sheet and the semiconductor device are held between a pair of flat plates for molding to seal the processed sheet and the semiconductor device in the resin molding.

23. The plastic package fabricating method according to claim 21, wherein

the processed sheet and the semiconductor device are enclosed in a space defined by a flat plate and a predetermined mold for molding to seal the processed sheet and the semiconductor device in the resin molding.

24. A plastic package comprising:

a plurality of terminal members each having an outer terminal having upper, lower and outer side surfaces, and a lead including an inner terminal having a contact surface;

a die pad connected to the terminal members;

a semiconductor device mounted on the die pad, and provided with terminal pads connected to the contact surfaces of the inner terminals with bond wires; and

a resin molding sealing the terminal members, the die pad, the semiconductor device and the bond wires therein;

wherein the inner terminal of each of the terminal members is thinner than the outer terminal, and has the contact surface, and included in the thickness of the outer terminal, the contact surfaces of the inner terminals and the upper and lower surfaces of the outer terminals of the terminal members are included in planes, respectively, the outer side surfaces of the outer terminals of the terminal members, and the lower surfaces of the leads are exposed outside.

25. The plastic package according to claim 24, wherein

the upper surfaces of the outer terminals of the terminal members and the mounting surface of the die pad are included in a plane.

26. The plastic package according to claim 24, wherein

an additional semiconductor device provided with terminal pads connected to the inner terminals with bond wires is put on the semiconductor device.

27. The plastic package according to claim 24 wherein

the package is formed in a flat, square shape.

28. The plastic package according to claim 24, wherein

the upper surfaces of the outer terminals of the terminal members are partially exposed.

29. The plastic package according to claim 24, wherein

the outer terminals of the terminal members are provided with cut parts in their outer side surfaces,

respectively.

30. The plastic package according to claim 24, wherein

the terminal members are formed of Cu, a Cu-base alloy or a Fe-Ni alloy containing 42% Ni.

31. The plastic package according to claim 24, wherein

the contact surfaces of the inner terminals and the upper and lower surfaces of the outer terminals of the terminal members are coated with a plated metal layer as a bonding plated layer selected from a plated solder layer, a plated gold layer, a plated silver layer, a plated palladium layer and a plated tin layer.

32. A plastic package fabricating method comprising the steps of:

forming a processed sheet having at least one pair of terminal members connected to each other through a connection, each having an outer terminal, a lead including an inner terminal, and a die pad by subjecting a terminal forming sheet to half-etching;

mounting a semiconductor device on the die pad;

connecting the inner terminals of the terminal members of the processed sheet to the semiconductor device with bond wires;

attaching a molding tape to the processed sheet, and sealing the processed sheet and the semiconductor device in a resin molding by molding; and

finishing a plastic package by removing the molding tape from the resin molding, attaching a cutting tape to the resin molding and cutting parts, corresponding to the connection of the processed sheet, of the resin molding from a side opposite the side of the cutting tape.

33. The plastic package fabricating method according to claim 32, wherein

the processed sheet and the semiconductor device

are held between a pair of flat plates for molding to seal the processed sheet and the semiconductor device in the resin molding.

34. The plastic package fabricating method according to claim 32, wherein

the processed sheet and the semiconductor device are enclosed in a space defined by a flat plate and a predetermined mold for molding to seal the processed sheet and the semiconductor device in the resin molding.